

## Guideline for use at contaminated sites in Ontario

### Introduction

The Ministry of Environment and Energy has prepared a revised guideline for use when property owners are cleaning up and/or redeveloping contaminated property in Ontario. The ministry has also prepared three accompanying documents which provide property owners and consultants with additional detailed information on parts of the revised guideline.

The *Guideline for Use at Contaminated Sites*, May 1996, replaces the *Guidelines for the Decommissioning and Clean-up of Sites in Ontario*, February 1989 and the *Interim Guidelines for the Assessment and Management of Petroleum Contaminated Sites in Ontario*, August 1993, issued by the Ministry of the Environment.

The revised guideline, which provides clearer, more workable directions on managing and reusing contaminated sites, does not change the legislative powers or the regulatory mandate of the ministry. The ministry has a mandate to deal with situations where there is an adverse effect, or the likelihood of an adverse effect, associated with the presence or discharge of a contaminant.

This guideline provides advice and information to property owners and consultants to use when assessing the environmental condition of a property, when determining whether or not restoration is required and in determining the kind of restoration needed to allow continued use or reuse of the site. The ministry has provided the guideline, along with the supporting documentation, to assist landowners in making decisions on soil and/or groundwater quality for proposed or existing property uses.

Public communication is often an element in the site restoration process, particularly when a change in land use is involved. Public communication allows the person proposing the undertaking to receive public input and to address public concerns. The method of public communication will depend on the complexity of the situation and the range of issues involved. The guideline suggests different levels of communication for the range of site restoration approaches.

### Approaches to site restoration

Three approaches for responding to site contamination are described. These approaches may be used when a decision has been made to remediate or restore a contaminated property. The approaches are: background, generic and site specific risk assessment.

#### Background approach

The background approach involves use of soil quality criteria to restore the site to ambient or naturally occurring background conditions. These background criteria were developed from an Ontario-wide sampling program at rural and urban parks unaffected by local point sources of pollution. A person proposing an undertaking may develop background criteria to reflect local conditions by completing a sampling program as outlined in the guideline.

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## Generic approach

The generic approach involves the use of criteria reflecting soil and groundwater quality; these criteria have been developed to provide protection against the potential for adverse effects to human health, ecological health and the natural environment. The criteria may be applied to agricultural, residential/parkland and industrial/commercial land uses. Criteria are also provided for potable and nonpotable groundwater use. The potable criteria ensure that groundwater may be used as a source of drinking water. The nonpotable criteria offer protection against vapors from groundwater and to aquatic life in surface water.

Generic soil criteria are provided for two depths of soil restoration and for two soil textures. Full depth restoration involves the use of the same generic criteria to the full extent of contamination. When contamination extends deeper than 1.5 metres from the surface, a stratified restoration using different generic criteria below 1.5 metres is an option.

Soil and groundwater criteria are provided for an extensive list of substances. Analysis for all the criteria may not be necessary in all instances. Conversely, analysis might be required for a compound suspected or known to be present at a site, but not listed in the tables of criteria provided in Appendix 2. The decisions involved in site investigation and sample analysis are always based on consideration of the specific factors at each property.

The generic soil and groundwater criteria may be modified to reflect particular site conditions. If appropriate, criteria from another jurisdiction may be proposed for use, or new generic criteria may be developed, if criteria are not provided for a particular contaminant.

## Potentially sensitive sites

There may be sites where the physical site characteristics or the ecological characteristics (plants and animals) are very different from those considered in the development of the generic criteria. For example, a potentially sensitive site is one where there may be a rare or endangered species which was not considered in the development of the generic criteria, but which may be affected by site contamination. In such a case, the generic criteria are inappropriate for use and more protective criteria will be needed.

## Site specific risk assessment approach

Site specific risk assessment (SSRA) and risk management are approaches which may be used instead of the background or generic approaches. The SSRA approach does not involve use of existing soil or groundwater quality criteria. Rather this approach may be used to establish criteria for a specific site or for a level of exposure protection based on risk.

Risk assessment is a scientific technique which estimates the health risk posed to humans, plants, wildlife and the natural environment from exposure to a contaminant. Because site specific characteristics are incorporated in a risk assessment, there will be numerical differences between the generic criteria which may apply at a site and those developed through SSRA.

Risk management decisions may be made using the results of an SSRA. These decisions may lead to use of techniques to manage, control the movement of, or reduce the concentrations of contaminants over time, independent of or in conjunction with site reuse.

When risk management decisions involve use of engineered measures to reduce the levels of risk at a site, the type of monitoring and maintenance required for the techniques used and the responsibility for ensuring that they continue to operate as designed must be outlined in a risk management plan.

## The investigation and restoration process

A four-step process is outlined in the guideline. The activities undertaken at each step will depend on site specifics and may vary from one site to another.

1. **Site assessment** – involves the systematic gathering of information to identify actual or potential contamination at the property.
2. **Sampling and analysis** – is intended to confirm and delineate the presence or absence of contamination at the site.
3. **Remedial work plan** – involves the development and implementation of a plan to restore the site to the appropriate condition and verify that restoration has taken place as planned.
4. **Completion** – involves summarizing the information gathered in the three previous steps, and may involve providing a record of the site condition to the ministry when remedial work has been undertaken.

The responsibility for ensuring that the site restoration work is completed in a manner consistent with the information provided in the guideline, and that the site is suitable for the intended use or reuse, remains with the property owner and those undertaking the work. The guideline does not eliminate the need for decision-making or use of professional skills and judgment when site restoration is being undertaken.

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The guideline is also available on the ministry's internet site at <http://www.ene.gov.on.ca>

